PBDEs and their hydroxylated (OH-BDE) and methoxylated (MeO-BDE) metabolites in fish and marine mammals

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We have completed multi-compound trace analysis, including PCBs, DDTs and several new chemicals of concern such as phthalate esters (PEs), synthetic musk fragrances (MKs), Pefluorinated Acids (e.g. PFOS), Flame retardants, i.e., PBDEs and Hexabromocyclododecane (HBCD), and various "current-use" pesticides in numerous environmental and biological samples. For example, we have recently quantified levels of several organhalogen contaminants in field-collected marine water, sediments, invertebrates, fish, seabirds and marine mammals, including BC killer whales *(Orcinus orca)* and Arctic beluga whales *(Delphinapterus leucas)* and ringed seals *(Phoca hispida)* from Canada's Pacific and Arctic coastal regions using high-resolution gas-chromatography mass-spectrometry (HRGC/MS). PCBs (e.g., CB153) exhibited the greatest biomagnification factors (BMF), ~50 in beluga whales. New chemicals of concern including PBDE congeners 47, 99 and 100, di-alkyl phthalate esters and synthetic musks exhibited substantially lower BMFs (range of 0.1 to 2.4) in birds and marine mammals than expected based on their Kow, indicating metabolism. Biotransformation of these compounds is supported by recent quantification of their corresponding metabolites. For example, several methoxylated and hydroxylated PBDEs have been detected in blood, milk and blubber of these free ranging marine mammals. Our future work will focus on assessing the fate and bioaccumulation of emerging contaminants and their metabolites.